P. EIJK 2-4-3-4-4-2-2-7 1/12

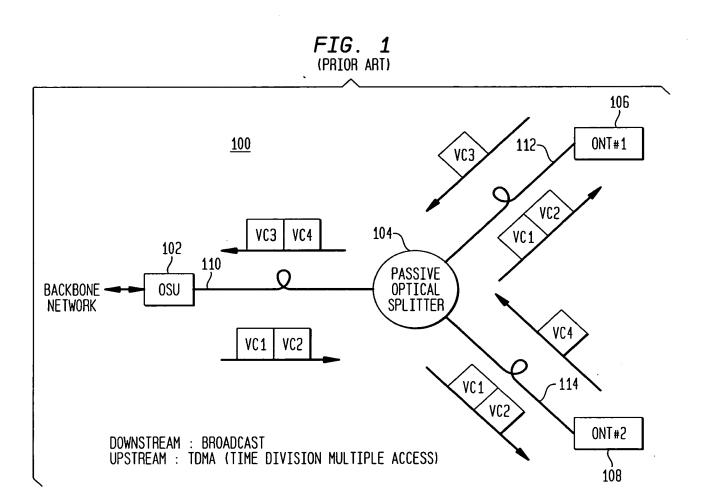


FIG. 2A (PRIOR ART)

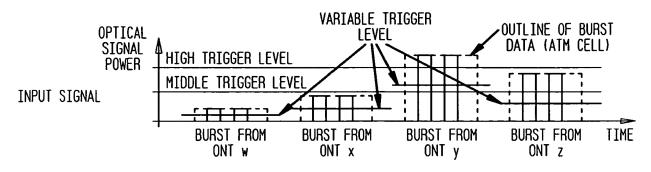


FIG. 2B (PRIOR ART)

CASE (a): OUTPUT DATA- [0]1010 TIME

FIG. 2C (PRIOR ART)

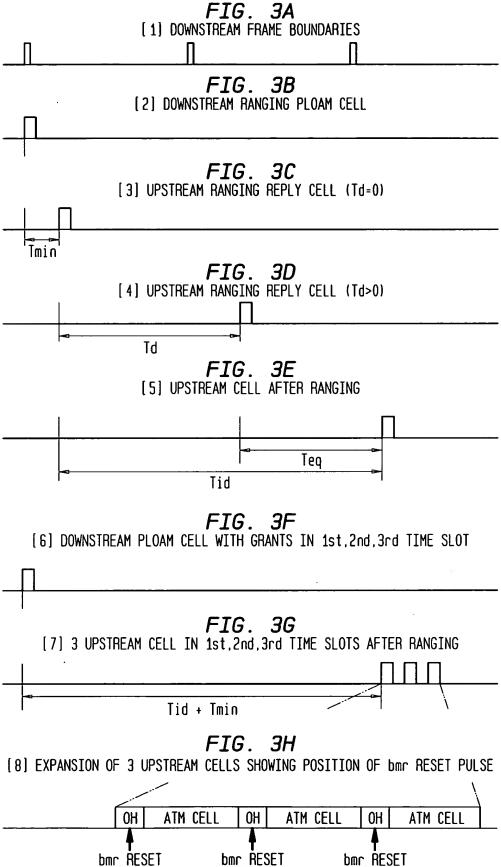
CASE (b): OUTPUT DATAMIDDLE TRIGGER LEVEL

TIME

FIG. 2D (PRIOR ART)



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PULSE

PULSE

PULSE

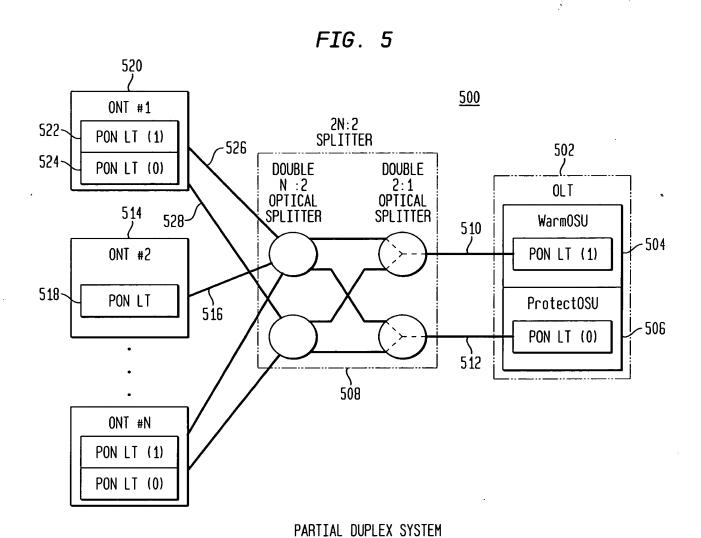
P. EIJK 2-4-3-4-4-2-2-7 4/12

FIG. 4 414-1 ONT #1 400 402 PON LT -416-1 0LT 414-2 N:2 PASSIVE OPTICAL SPLITTER **WarmOSU** 410 404 PON LT (1) ONT #2 416-2 PON LT Protect0SU 408 -406 PON LT (0) 412 416-N-414-N ONT #N PON LT

OLT-ONLY DUPLEX SYSTEM

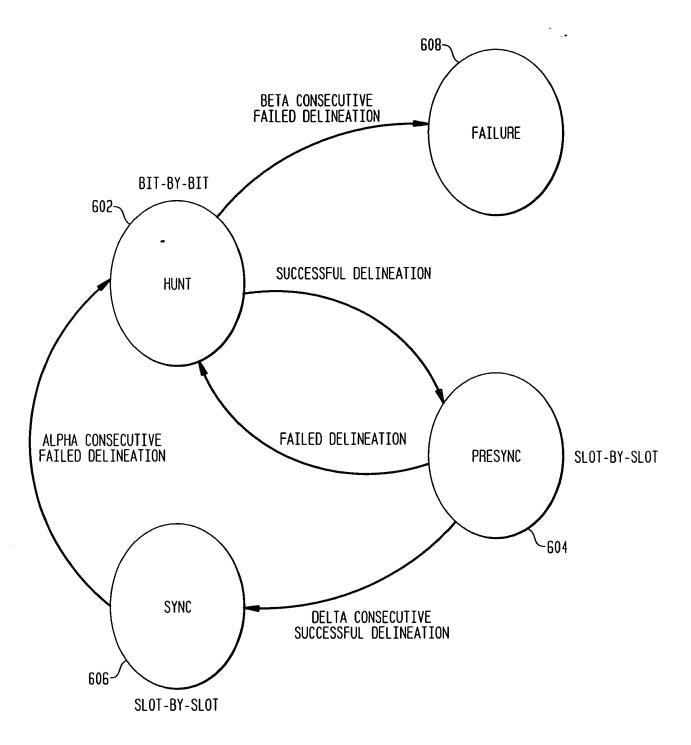
1

P. EIJK 2-4-3-4-4-2-2-7 **5/12**



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FIG. 6



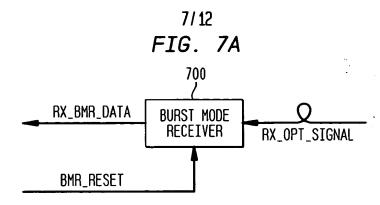


FIG. 7B
TIMING REFERENCE AT WarmOSU



FIG. 7C RX_OPT_SIGNAL (OPTICAL SIGNALS RECEIVED BY BURST MODE RECEIVER)

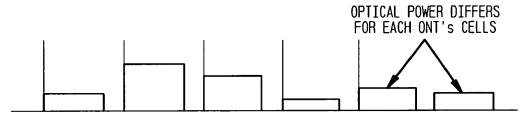


FIG. 7D

BMR_RESET (BURST MODE RECEIVER
RESET SIGNALS-SPACED OUT BY 449/448 BITS)

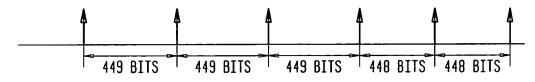
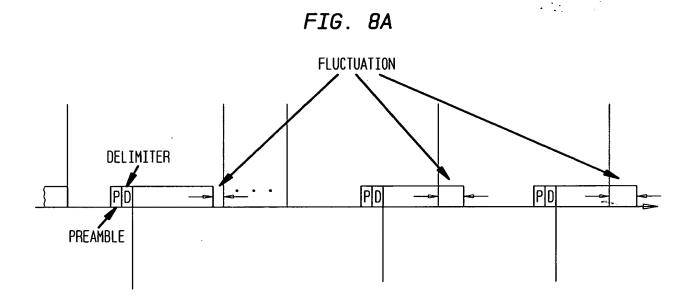


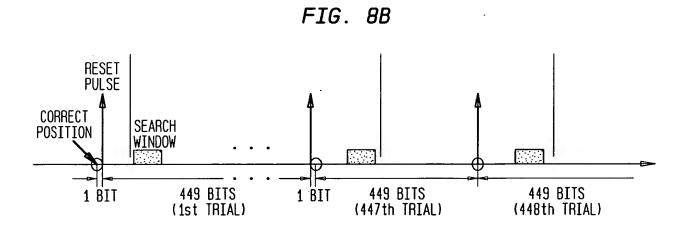
FIG. 7E

RX_BMR_DATA (OUTPUT OF BURST MODE RECEIVER)

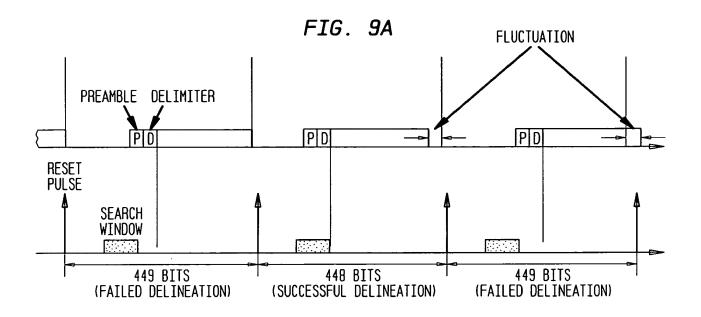
UNRECOGNIZED DATA TRANSITIONS (GARBAGE) ATM CELL ATM CELL

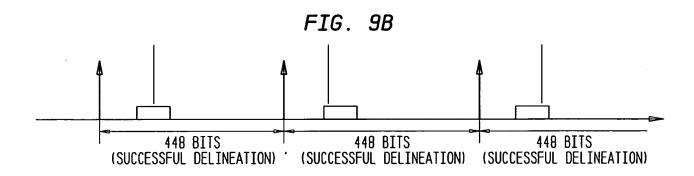
P. EIJK 2-4-3-4-4-2-2-7 **8/12**





P. EIJK 2-4-3-4-4-2-2-7 9/12





10/12

FIG. 10A

FRAME BOUNDARIES ON WarmOSU AND ProtectOSU (SYNCHRONIZED)



FIG. 10B

DOWNSTREAM PLOAM CELLS (PL1 CONTAINS PLOAM GRANT FOR ONT #1)

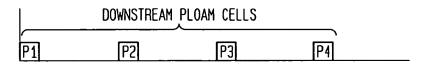


FIG. 10C

UPSTREAM RECEPTION OF PLOAM CELL FROM ONT #1 (Td1, Td2=0)

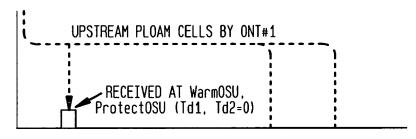


FIG. 10D

UPSTREAM RECEPTION OF PLOAM CELL FROM ONT #1 (Td1>0) AT WarmOSU

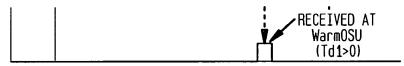
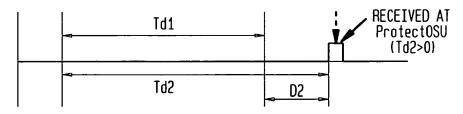


FIG. 10E

UPSTREAM RECEPTION OF PLOAM CELL FROM ONT #1 (Td2>0) AT ProtectOSU



Td1: DELAY MEASURED AT WarmOSU

Td2: DELAY MEASURED AT ProtectOSU

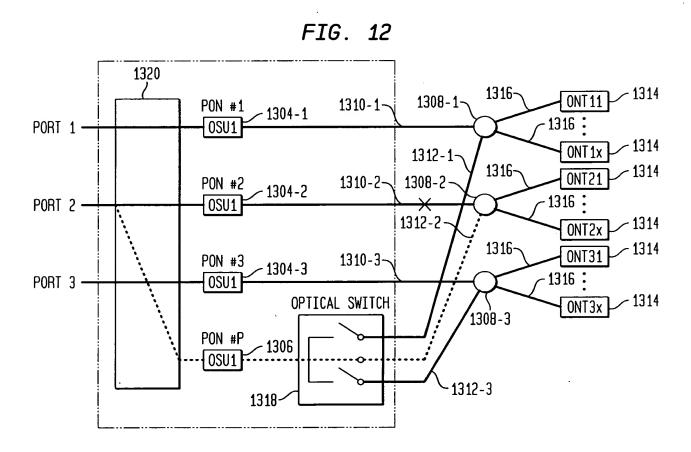
D2: TIME DIFFERENCE BETWEEN START OF FRAME IN WarmOSU AND ProtectSU,

DUE TO DIFFERENCE IN DISTANCE TO SPLITTER

*SOF: START OF FRAME

FIG. 11

1
2
3
P
1:N PROTECTION (EXAMPLE N=3)



PON LT (1)

PON LT (0)

P. EIJK 2-4-3-4-4-2-2-7 12/12 FIG. 13 2N : 2 ONT #1 **SPLITTER** PON LT (1) DOUBLE DOUBLE N:2 2:1 PON LT (0) OPTICAL OPTICAL 0LT SPLITTER **SPLITTER WarmOSU** ONT #2 PON LT (1) PON LT Protect0SU PON LT (0) ONT #N PON LT (1) PARTIAL DUPLEX SYSTEM PON LT (0) FIG. 14 2N :2 SPLITTER ONT #1 PON LT (1) DOUBLE DOUBLE N:2 OPTICAL 2:1 OPTICAL PON LT (0) 0LT SPLITTER **SPLITTER WarmOSU** PON LT (1) ONT #2 PON LT Protect0SU PON LT (0) ONT #N

PARTIAL DUPLEX SYSTEM

1